



Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at <http://about.jstor.org/participate-jstor/individuals/early-journal-content>.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

CURRENT LITERATURE

BOOK REVIEWS

Heredity

Several courses of public lectures on heredity have been made the basis of a very readable book by CASTLE,¹ in which the principles of Mendelian heredity and other related topics are discussed with special reference to their bearing upon evolution and animal breeding. The rapidly increasing number of expositions of Mendelism are warranted both by the growth of scientific knowledge, and by the popular demand for information, and it is gratifying to have the subject presented in easily comprehensible language by one who is among the foremost investigators of the phenomena with which the book deals. The manner of origin of this book makes it natural that the author should illustrate the various principles of heredity by examples from his own extensive experiments, whenever such examples are available, and this method gives the book a unique value.

The brief introductory chapter on "Genetics a new science" recognizes the profound influence exercised by the theory of evolution in many fields of human activity, and shows how the evolutionary idea has forced man to consider his own probable future and to seek to control that future. As the "existence of civilized man rests ultimately on his ability to produce from the earth in sufficient abundance cultivated plants and domesticated animals," "civilization may be advanced in a very direct and practical way" by an increased knowledge of plant and animal breeding. To the solution of the problem "how to create new and improved breeds better adapted to the conditions of present-day agriculture," and especially to an exposition of the "operations" of Mendel's law of heredity, the author specifically addresses himself.

Chap. i on "the duality of inheritance" defines heredity as "organic resemblance based on descent," and discusses fertilization, pointing out that either eggs or sperms can under certain experimental conditions produce a complete organism without union with another gamete, and that such a result is realized regularly in nature in the case of male bees and wasps. The x and $2x$ generations of *LOTSY* are then considered under the designation N and $2N$ generations, a change of terminology which has nothing to commend it. Chap. ii distinguishes between "germ-plasm" and the body or "soma," and cites experiments in the transplantation of eggs to an alien soma as proof of

¹ CASTLE, W. E., *Heredity in relation to evolution and animal breeding*. 8vo, pp. xii + 184. figs. 53. New York: D. Appleton & Co. 1911.

the correctness of WEISMANN's contention that "body and germ-cells are physiologically distinct," and that "body (or somatic) influences are not inherited." The next six chapters deal with "the greatest single discovery ever made in the field of heredity, Mendel's law," with illustrations drawn chiefly from the author's experiments with guinea-pigs, rabbits, rats, and mice. After a careful statement of the general principles with concrete examples, attention is given to the determination of dominance, heterozygous characters and their "fixation," atavism or reversion, evolution by loss or gain of characters, evolution of new races by variations in the potency of characters, modification of unit-characters by selection, and "blending" inheritance. This enumeration of the subjects treated suffices to indicate that the author's discussion is no merely formal presentation of the ramifications of the Mendelian system. Instead, it deals lucidly and entertainingly with a number of moot questions. It is pleasing to note that the author does not follow some other recent writers (BATESON, PUNNETT, DAVENPORT) in the view that dominance is always due to the presence of a gene which is absent from the recessive form. He mentions several cases for which this explanation is not available, and leaves the problem as to the cause of dominance unsolved. He is convinced that unit-characters may be modified by selection. He says (p. 120): "In several cases I have observed characters at first feebly manifested gradually improve under selection until they became established racial traits." While this must be accepted as an observed fact, the statement that it is due to selection is apt to be misleading. The difficulty remains that selection can only pick out individuals already possessing the observed degree of development of any characteristic under consideration, and does not in any manner modify the qualities which will be possessed by the offspring of the selected individuals. It only permits such individuals to reproduce to the exclusion of other individuals which do not have the character in question. Under "blending inheritance" the now well-known case of skull-size and ear-length in rabbits is discussed, and the view is expressed that in the light of experimental results of NILSSON-EHLE, EAST, and others, such cases of apparent blending may really prove to be segregating inheritance in which a considerable number of units are involved.

In chap. ix the effects of in-breeding are considered, and the reviewer's conception is indorsed, that the apparent deterioration is generally due to the formation of homozygous strains, whereby the stimulus is lost which comes from the "bringing together of differentiated gametes, which, reacting on each other, produce greater metabolic activity." In this connection the statement is made (p. 150) that "under self-pollination for one generation following a cross, half the offspring become homozygous; after two generations three-fourths of the offspring are homozygous"; and so on. This statement is misleading as it stands, and is literally true only in the case of monohybrids. A second cause recognized for deterioration following in-breeding is the appearance of recessive defects, such as albinism, etc., a cause which has been specifically pointed out by DAVENPORT.

The tenth and last chapter deals with heredity and sex. The hypothesis offered by the author several years ago that the female regularly possesses a chromatic element, or something else in addition to the possessions of the male, is made the key to the entire discussion of this subject, and a series of facts is presented which give the hypothesis considerable apparent plausibility, although the philosophical basis for it seems to the reviewer to be a little strained. This basis is found in the statement that the female as compared with the male has an additional function, namely the supplying of nourishment to the young zygote. On the other hand, it may be pointed out that the male differs from the female in many functions, and is in many respects morphologically and physiologically the superior sex, and it is possible to interpret these differences as additions to the female. If the egg has the added function of nourishing the young zygote, the sperm has the added function of motility, and there seems no better a priori ground for expecting an additional chromatin element to represent one of these additions than the other. The reviewer believes that there is no sufficient ground at present for the assumption that sex is always determined in the same manner. It cannot be determined as yet whether the basic differences between the sexes are quantitative or qualitative, and in either case the same results might be attained by any one of several different methods. The attempt to bring the sex-phenomena of all organisms under a single viewpoint is premature.

Each of the chapters is followed by a "bibliography," but the meagerness of the literature lists may be judged from the fact that they include only 46 titles from 26 authors, including 14 of CASTLE's own papers. This may be compared with the bibliography appended to another recent book on heredity which includes 426 titles from 170 authors. However, this is not intended as an adverse criticism of CASTLE's excellent book, but is mentioned to show the limitations of its author's aims. Extensive literature lists are indispensable to students, but would defeat their own purpose in a book intended primarily for popular reading.

The press work is excellent and typographical errors are few, though "reversion" is rendered "revision" in the heading of chap. iv.—GEORGE H. SHULL.

NOTES FOR STUDENTS

The mycoplasma theory.—In spite of many attempts to establish the truthfulness or fallacy of ERIKSSON's mycoplasma theory, its status has not been definitely settled, and it continues to be a subject of controversy. An outline of the history and the present status of the theory is presented by ERIKSSON² in a brief article occasioned by MARESCHKOWSKI's³ appropriation

² ERIKSSON, J., Über die Mykoplasmatheorie, ihre Geschichte und ihren Tagesstand. *Biol. Centralbl.* 30:618-623. 1910.

³ MARESCHKOWSKI, C., Theorie der zwei Plasmaarten als Grundlage der Symbiogenesis. *Biol. Centralbl.* 30:278 ff. 1910.